MOBILE APPS: ONLINE PARKING COUPON

By

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Dissertation report submitted in partial fulfilment of
The requirement for the
Bachelor of Technology (Hons)
Information and Communication Technology

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CERTIFICATION OF APPROVAL

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Approved by,

_____

(Ahmad Izuddin Zainal Abidin)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

Jan 2015

CERTIFICATION OF ORIGINALITY

This is to certify that I am held responsible for the work submitted in this project, that the original work is my own except citations included in this project as stated in the references section and that the original work contained herein have not been undertaken or done by unspecified sources.

_____

Rifqi Zainal Abidin

TABLE OF CONTENT

ABSTRACT

Online Parking Coupon is design as mobile apps which for Android operating system. . This car parking coupon system are under ‘Majlis Pembadaran’ or Municipal council, at Malaysia each state has their own municipal council. Seberang Perai Municipal Council (MPSP) practice coupon parking system since 1995. The author design this applications to introduce an alternative way of parking coupon and provide user with a simple yet useful application that could help them save time and on the same times ease their task. On early stage, this application are design for a limited area only. This application focus on Seberang Perai area.

The author planning in implementation of SDLC method for the development phase. Other method, such as online questionnaire are distributed via social media. The author successfully collect 61 responses from 61 respondent which from different background. The author study that the majority found that today parking coupon system are not as efficient, and they agreed on the development of this project which is Online Parking Coupon. Based on analysis of feedback the author receive through the online questionnaire, the author believe the implementation of online parking coupon in the system will help many people in the future.

ACKNOWLEGDEMENT

First of all, I would like to express my gratitude to Allah SWT for given me the guidance and opportunity to complete my Final Year Project. My family are not to forget as well as they gave me moral support and kept on follow my progress. I would also like to express my deepest gratitude to my supervisor, Mr. Ahmad Izuddin that always help me through this FYP. He who guide and help me from start to completion of this project. Mr. Ahmad Izuddin contribute his knowledge and opinion as much as possible to help my project. Not to forget Dr. Sobri Hashim, who spend a lot of time to guide us through this FYP phased. He conduct a briefing special for us final year student regarding what to do throughout this 2 semester. Other lecturers who willing to spend their time despite their busy schedule and time constraint they still manage to conduct lecture that taught us regarding FYP step by step.

Lastly, all my friend that going this phase along with me. We share knowledge, wisdom and exchange opinion throughout this FYP phase. I also immensely graceful for their comments on my project.

CHAPTER 1

INTRODUCTION

1.1 Background Study

Parking coupon are used as a legal pass or permitted for parking. It is compulsory for everyone to use the coupon when they parked their car. This car parking coupon system are under 'Majlis Pembadaran' or Municipal council, at Malaysia each state has their own municipal council. Seberang Perai Municipal Council (MPSP) practice coupon parking system since 1995. Owner of vehicle (expect motorcycles) that park in any area under jurisdiction of MPSP are required to display a parking coupon. The objective of this coupon parking system is to create an environment of Kuantan that is structured and well planned through systematic, efficient and effective car parking service. Car owner need to display their parking coupon when they park on the Municipal Council parking area. On the parking coupon there are a few attributes which is year, month, day, hour, and minutes that user need to highlight or scratch the surface to indicate the initial time where the owner park their car. Normally a single coupon are only usable for an hour, thus user need to careful with the duration of time.

1.2 Problem Statement

Driver are often forgot to buy parking coupon when they needed or when they used up all of it. Usually the moment they realised they have no parking coupon available are when they are already park their car, and this is very frustrating since the parking are limited and it is hard to secure a single parking space since drivers usually are more in numbers than parking space available. Although there are merchandiser parking coupon agent that sell it, it is very troublesome there are very few that sell it, and we did not know the exact location. By the time we search for a merchandiser that sell parking coupon it has already consume a lot of time and there are possibilities our car already been fined by authorities. Another flaw, human are tend to forgot something every day, sometimes they forgot to display their parking coupon because of busy schedule or they got their head full thinking something else.

Parking meter has proven some flaw itself which they are easily fail to function due to vandalism or malfunction.

1.3 Objective

Nowadays, most of people has owned smart phone. Nevertheless, smart phone has help user ease their routine life and task with its useful application. Sometimes smart phone user tend to depends to their smart phone to accomplish their daily task. Thus, the author develops this application to ease user daily routine and task.

The main objective of this mobile application to be develop are:

i. To introduce an alternative way of parking coupon.
ii. To help and ease driver in terms of time and efficiency.

1.4 Project Scope

Project scope are important to define the order to create and complete a particular project and the delivery of the system that targeted to be developed. In this particular project the following detail outline of project are:

- This application is limited to a certain state, area and zone due to the time frame given for the project.
- This apps are perform as virtual coupon and online payment only.
- This apps will not help user secure a parking.
- The given apps are intended for advising and recommend nearest parking area, user will not able to use it to search other irrelevant places.

1.5 Relevance and Feasibility

This mobile pass is related to current lack of mobile application that acts as parking coupon online payment system. This mobile apps is targeted for everyone within the age of 18 to 60 years old that focuses on those who owned a car and use it daily, to be more precise user that park their car at the Municipal parking area every day or frequently. The current method are by using scratch coupon or parking meter. The methods are not efficient as a few flaw has shown which people tend to forgot to display their coupon or parking meter are being vandalise by irresponsible party.

CHAPTER 2

LITERATURE REVIEW

2.1 Mobile technology

In definition, mobile technology is a technology that mobile and portable, which provide a variety of function that help people with their daily task. Nowadays, a standard mobile device are comprise with a several technology such as GPS navigation system, a web browser, music player, picture gallery, instant messenger system and much more. A mobile app is computer program that design to run on smartphones, tablet computer or other mobile devices. [1]

According to Forman and Zahorjan, (1994) mobile computing has caught the attention of the research community for quite some time and by through smart phones and PDAs which are mainstream device for consumer has brought an impact into the commercial industry as well consumer.

Today, the development of mobile applications has generated more attention among the independent and self-employed developer community due to the constant improvement in hardware related to mobile computing. This improvement such as better processing power and speed, larger wireless network bandwidth to maximize mobility and connectivity has enhances the capabilities of mobile devices. Furthermore, mobile devices are capable in running rich stand-alone applications as well as distributed client-server applications that access information via web gateways. This has resulting to opening up new opportunities for future mobile application and service development. By 2011, the potential of the mobile application market is expected to reach $9 billion. [2]

2.2 Seberang Perai Municipal Council

At 1800, Seberang Perai or Province Wellesley formerly a part of British colony. The administration of municipal council was based in Penang on that particular period. With an area of 489.3 square kilometres and a population of about five thousand men. The geography of the land during that time was bush-infested areas, swamps and forests are then converted to agriculture when exploration efforts began in 1850. After the Pangkor Treaty agreements was signed in 1874, the area of Province Wellesley increased to 740.12 miles. The population on that area is growing, especially in areas such as Butterworth and Bukit Mertajam that act as trade center. Capacity area of Wellesley however was reduced to 738.41 square kilometres effects of changes in Sg Muda border between the states of Kedah and Penang. [3]

In 1896, the Municipal Ordinance introduced which allows the state to apply laws for handling public affairs. In 1913, a new ordinance was issued which empowers the State Government established the Rural Board. Municipal Council of Butterworth and Bukit Mertajam and Rural Council of North, Central and South were established. In 1961, the administration of the Town Council and Rural Council has been united under one authority administered by the District Council and District Council respectively. [3]

On June 30, 1974, the Local Government Act (Temporary Provisions) Act 1973 was enforced throughout the state of Penang. On July 1, 1974, the three North District Council, District Council and District Council, South Central, Wellesley consolidated and is known as the Local Government Management Board, Seberang Perai. On December 15, 1976, through the application of the Local Government Act 1976, the Local Government Management Board was upgraded to Seberang Perai Municipal Council. [3]

Figure 1

Figure 2

2.3 Parking Meter

In definition, parking meter is a device that work as mechanism that allowed someone to park their vehicle for a limited amount of time in exchange that the individual put a certain value of money into the parking meter. Municipalities usually use it as a tool for enforcing their integrated parking policy, usually related to their traffic and mobility management policies. [4]

In August 30, 1928, Roger W. Babson filed an early patent, US patent, for a parking meter. [6] The meter was originally intended to operate on power from the battery of the parking vehicle which required a connection from the vehicle to the parking meter. The first working parking meter, the Black Maria was designed by Holger George Thuesen and Gerald A. Hale. Both of them were engineering professors at Oklahoma State. On 1933, at the request of Carl C. Magee of Oklahoma City, the both engineer are required to working on development the parking meter. Their development has proven successful after their parking meter was installed in Oklahoma City on July 16, 1935 as the world first installed parking meter. [5][6][7]

In 1936, the industrial production parking meter were started and expanded until the mid of 1980s. The features mechanism of first models were based on a coin acceptor, a time meter with visible pointer to indicate expiration of paid period. During the period, a few changes are made in the exterior design such as double headed version and the implementation of new materials and production system but the base configuration or system structure remained the same for more than 40 years. [8]

At Malaysia the implementation of parking meter are also noticeable around the country. Today, most of it are replace with parking coupon due to malfunction or broken parking meter resulting from vandalism.

Figure 3: 1940 model

Figure 4: Present model

2.4 Pay and display

Pay and display system are difference from road-side parking meters and parking coupon. Pay and display system are designed to prevents driver from taking advantage of parking meters remaining balance time. The pay and display system has been a factor that doubled parking revenues in cities.[9] Furthermore, pay and display machines can also accept variety of credit cards which making drivers easily by not caring larger amount of coins, the system also accept wide variety of coins. In addition, credit user gave the advantages for the company that provide this system where they did not have to empty the coins as often. Indirectly reduces their overall costs and avoids possible stealing by employees who empty the machine. In the UK, the pay and display system are used for both on street parking, multi-storey car parks and parking lots. [10]

Figure 5: UK pay and display machine model

Figure 6: Pay and display machine

2.5 Coupon Parking

Another ideologies pay and display are coupon parking. Coupon parking does not required machines or parking meters, instead the driver need to purchase a booklet of coupons in advance from the Municipal Council or any authorize merchandiser as agent that sell the parking coupon. The way to use a parking coupon is where the driver need to scratch off sections on the date and time which the driver leaves the vehicle. After completely scratch off the date and time section, the driver need to display their coupon on the dashboard for inspection from local authorities. If the driver tend to park more than an hour, he/she will need to display multiple coupons as usually a single sheet of coupon represent an hour. The parking system are widely used in Malaysia, Singapore, Brazil, New Zealand, Austria and Ireland. Compound will be charges by local authorities for those who does not display their parking coupon. [10]

Figure 7: Singapore Parking Coupon

Figure 8: Malaysia Parking Coupon

In Malaysia the implementation of parking coupon are widely use in each state. The rate however are difference on each state, it depends on the state municipal council to decide the rate.

The below table are price rate from Seberang Perai Municipal Council. The following are:

Type of Coupon	**Cost**	**Information**
Hour	RM 0.40/ hour per coupon	Coupon are available for purchase from merchandiser coupon parking agent and MPSP counter
Day	RM 3.00/ day per coupon	Coupon are available for purchase from merchandiser coupon parking agent and MPSP counter
Month	RM 75.00 / monthly	Available for purchase only at MPSP headquarters and MPSP branch office
Special Parking Space	RM 200.00/ monthly	MPSP provide discount for a certain duration: 1 year = RM 1,920.00 9 months = RM 1, 530.00 6 months = RM 1,080.00 3 months = RM 570.00

Table 1

*Retrieve from www.mpsp.gov.my

CHAPTER 3

METHODOLOGY

3.1 Data Collection

The first methodology that the author applied is data collection. Data collection is a systematic approach to gathering information from a variety of sources for enable one to answer stated research questions, test hypotheses, and evaluate outcomes. There are a few data collection that the author conduct which internet research to find a several article or journal that related to this project.

Others method such as observation, discussion and survey are conducted for this project. For observation, the author walk around Seberang Prai parking area to observe the number of driver did not display their parking coupon and how many are given compound by local authorities due to violating the law. A quantitative research was conducted to gather the user behaviour, expectation, and problem as well the recommendation of the application. The questionnaire are consisted of 11 question that distributed online thorugh media social which aimed to all people from age 18 to 60 years old.

3.2 SDLC

System development life cycle is conceptual model that usually used in huge or small project that describes particular stages involved in an information system development project. The range of this method are benefited from initial feasibility study through maintenance of the completed application.

The author planned to use Software Development Life Cycle method because the SDLC model is that it gives a review at the end of each phase so developer can track the progress and see if they're on target with their goals. This allows for developer to exercise their control greatly. The advantage of SDLC concept is that it ensures system requirements can be traced back to the original for any changing or maintenance.

SDLC very much focuses on achieving goals, with the implemented of SDLC concept, the author believe there is a high possibility that goals will be achieved. The SDLC concept is very easy and simple to understand with all the stages. There are various models of the SDLC all of which are easy to understand. For example the waterfall model it has a clearly defined stages and a simple goal. Also the process and results are well documented. It is an easy structure to comprehend. With it being so easy to understand it increases the possibility of projects succeeding. SDLC also produces many products that can be reviewed to see whether they meet the user's needs and conform to standards and if they don't then the company can scrap that product. [12]

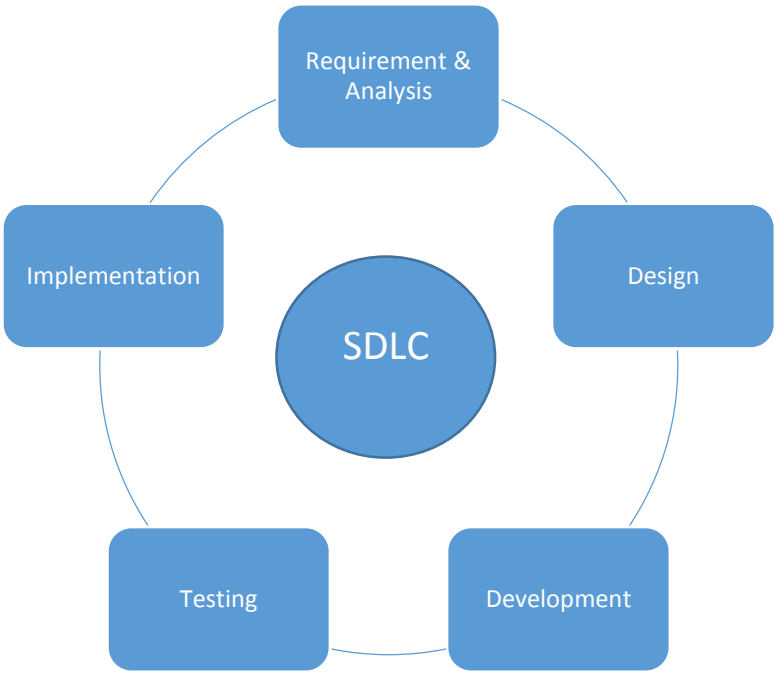


Figure 9

- Requirement
    - On this stage, it is responsible for identifying goals or objective of the project after the problem is solved.
    - The objective of this project is to introduce an alternative way of parking coupon and to help and ease driver in terms of time and efficiency
    - A friendly user interface also important for the universal usage of user. Since the target market are user from age 18 to 60 years.
    - Other criteria such as estimating benefits in the new system over the current system, and identifying other areas that are affected by the solution.

- Analysis
    - Responsible for carrying out detailed study of the requirement and arriving at the exact requirements of the proposed system.
    - Before the design phase begins, the requirement will be halt for a certain purpose.
    - Analysis result of questionnaire to study the behaviour of user.

- Design
    - On this stage, design responsible for translating the identified requirements into a logical structure, called design that can be implemented in a programing logic.
    - The goals at design phase are able to come out with a friendly User-Interface (UI) since the target market are age from 18 to 60 years old, the author need to design a simple user-interface yet could achieve all the requirement.
    - Implementation of Unified modelling Language (UML) diagram such as use case diagram, class diagram and sequence diagram.

- Development
    - Involves integrating and testing all the modules developed in the previous phase as a complete system.

- Testing
    - Involves integrating and testing all the modules developed in the previous phase as a complete system.
    - A thorough testing need to be done to find any flaw or defect that might cause the product to fail.
    - By this stages, all the requirement function are able to achieve.
    - Any changes of requirement need to be done on this phase before deployment.

- Implementation
    - Responsible for converting the new system design into operation.
    - On this final stages all the requirement should fulfil and this project goals or objective should have been achieved.
    - Maintenance and updating are required throughout the time for efficient and operational application.

3.3 System Architecture

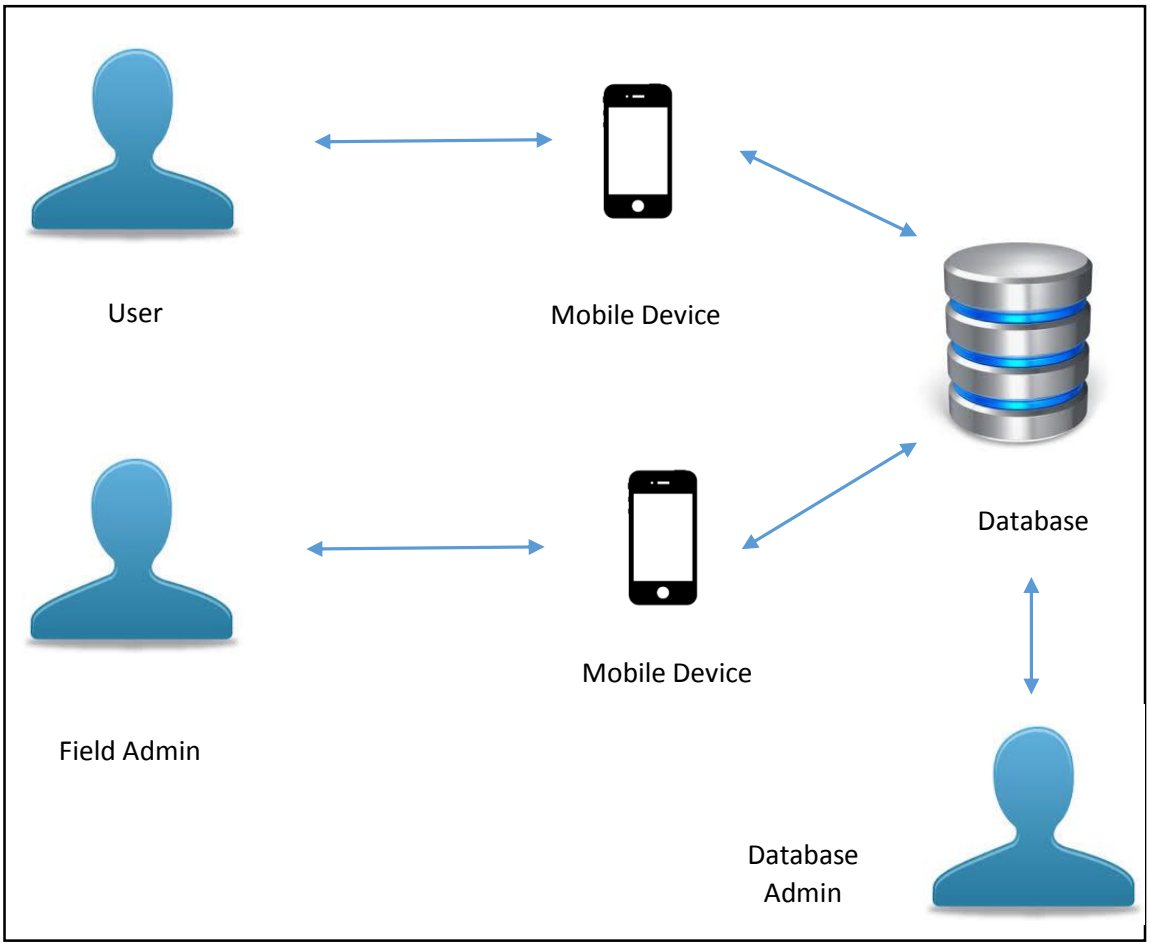


Figure 8

Figure 8 show the system architecture of Online Parking Coupon. The five main component are user, field admin, database admin mobile device and database. Each component reach to each other except user and admin. On this application the user are the input whereby user will register and account and enter every requirement

needed to register and user can start to use the functionality. User information are saved in the database as well the transaction and using of virtual coupon. Field admin can only access the database to check user car plate number that use the virtual coupon when they parked their car. They have no access to check user detail information. On the other hands, database admin have access to check user information, transaction history and the usage of virtual coupon. The mobile device will provide the application user interface. The database will save transaction history, user information and the usage of coupon.

3.4 Use Case Diagram

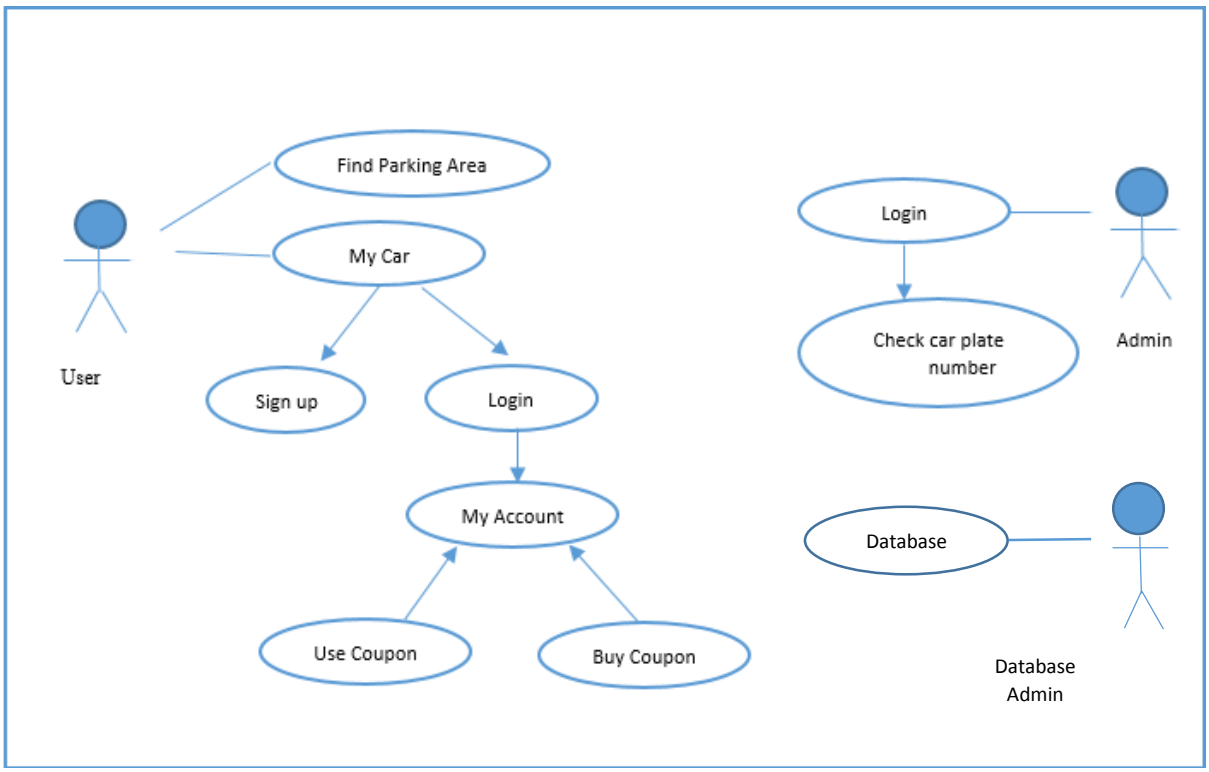


Figure 11

Figure 11 show the use case diagram for Online Parking Coupon system. There are three actor which is user, field admin and database admin. The system have two main use cases which is Find Parking Area and My car. While my car are down to another 2 use cases which is Sign up and Login. From Login user can use and buy the virtual coupon. For the field admin, the main use case are login and check car plate number which is to verify whether the user use the virtual coupon when they park. Database admin can access to the database.

3.5 Key Milestone

Key milestone is a typical life cycle of a business project includes several key milestones that mark significant point in the process. These checkpoints in the planning, building and completion stages help you determine if the project is on track.

The purpose of key milestones to keep the project on time. All project have a work plan that lays out the specific steps and actions that are required to complete the project. By choosing the specific steps in that plan as your key milestones, you are able to keep track of your progress. We are likely to know the end date of the project, but we want to make sure that we keep track our progress throughout the project. In order to keep track, we need to assign specific completion dates for each milestone to helps determine if we are staying on our track to meet the final dateline. Without the milestones, we might not realize until it's too late to finish it on time.

Timelines

FYP 1

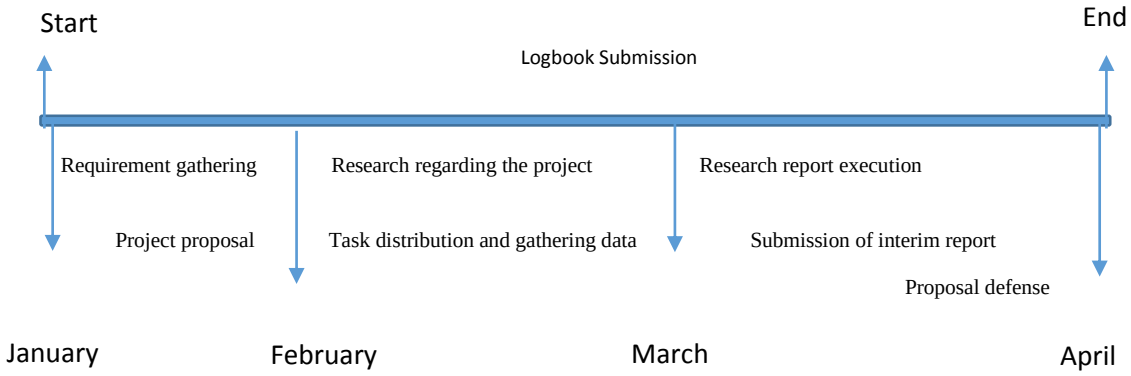


Figure 12

FYP 2

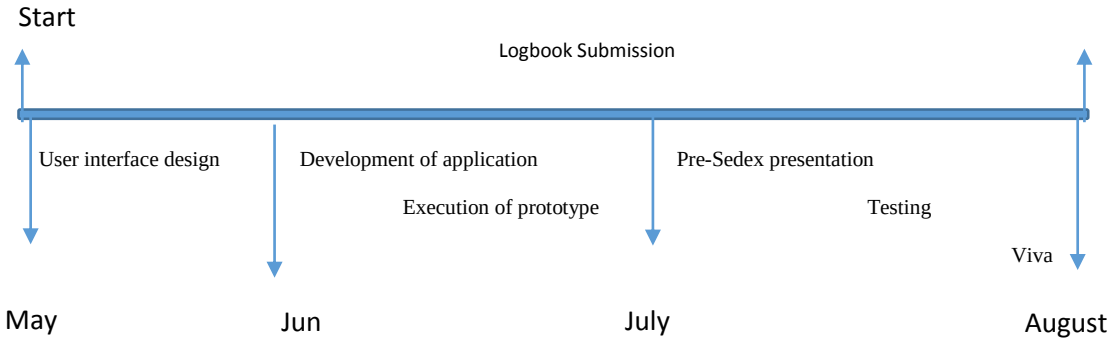


Figure 13

3.6 Gantt chart

FYP 1

Month	January				February				March				April			
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Task																
Conduct a search and review for project topic																
Project Proposal																
Study briely regarding the topic																
Submission of logbooks																
Search for relevant journals																
Begin interim report																
Conduct survey and distribute questionnaire																
Design User interface																
Development of application																
Submission of interim report																
Proposal defense																

Table 2

FYP 2

Month	May				June				July				August			
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Task																
User Interface Design																
User-end Application Development																
Admin Application Development																
Pre-Sedex Presentation																
Execution of application																
System testing																
Technical Report																
Dissertattion report																
Viva presentation																

CHAPTER 4

RESULT AND DISCUSSIONS

4.1 User Interface

4.1.1 Main Page

The main page of online parking coupon will be simple as possible to avoid any confusion or difficulty for user while using it. The main page will show three button which is “Find Parking Area”, “My car”, and “Settings” options.

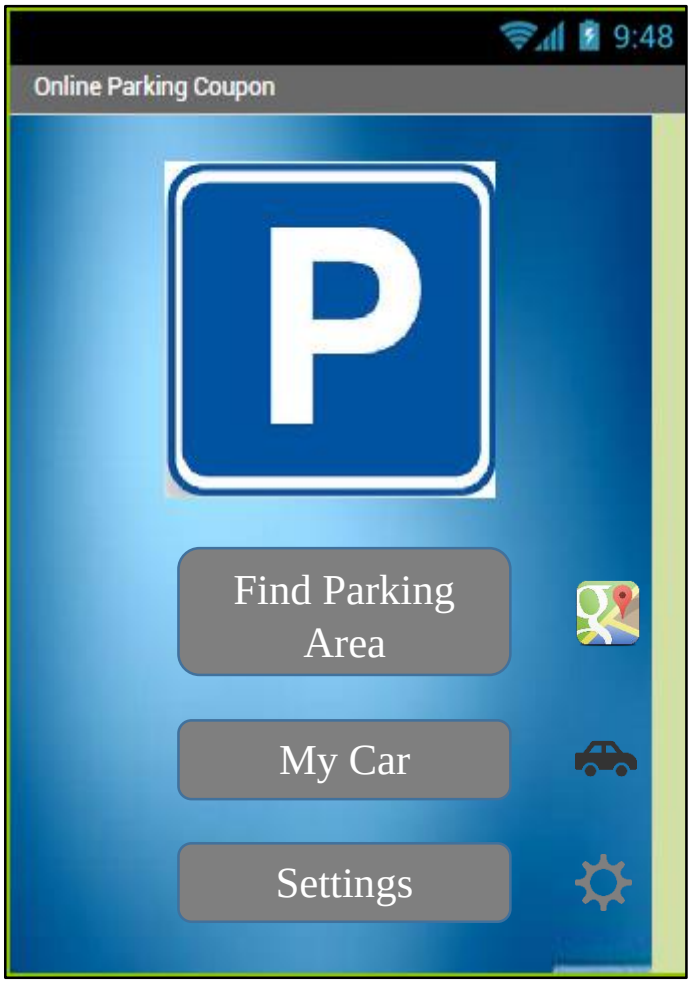


Figure 10: Main page UI

4.1.2 Find Parking Area

The first function of this application is to find nearby parking area. The red marker shown that the surrounding are parking area which under jurisdiction of Municipal Council. This to alert the user that they need to use a parking coupon at this area. There is a search bar for user to find parking nearby the area.

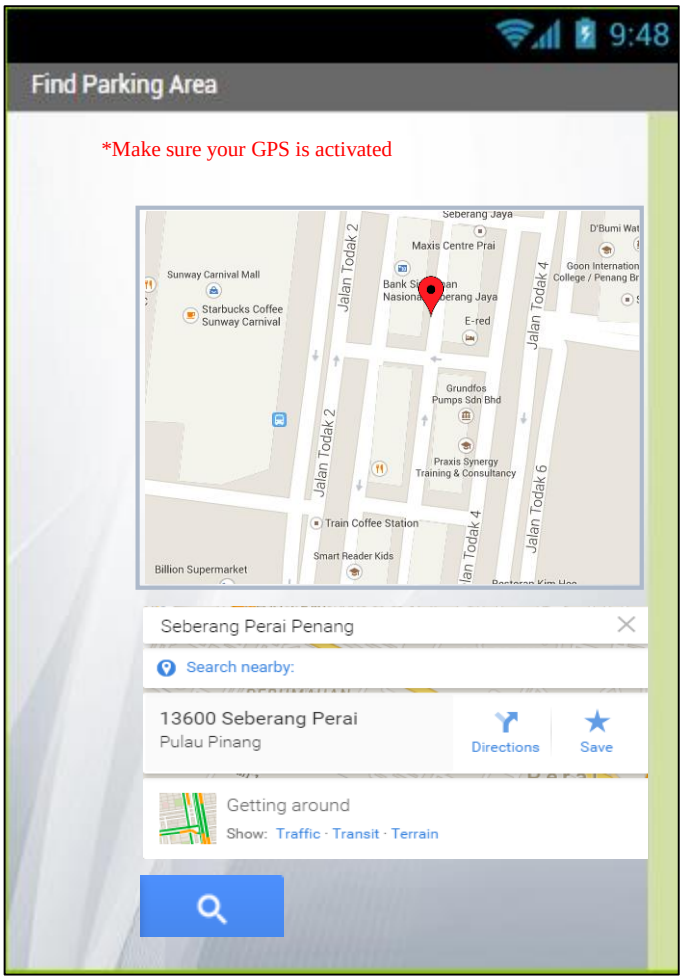


Figure 11: Find Parking Area UI

4.1.3 My Car

The second interface which “My Car” are functions as the user account. First time user will need to sign up and if the user already sign up they can straight log in to their account.

Figure 12: My Car UI (Account)

4.1.4 Sign Up

On sign up page, the user only required to enter minimum information of themselves. As stated the application only required a full name, contact number and car plate number. The information regarding car plate number are compulsory because when the user park their car and pay, the only primary information that proven the user paid the coupon is through their car plate number. After the user paid the coupon, their car plate number will registered into the database and local authority could check it for validation.

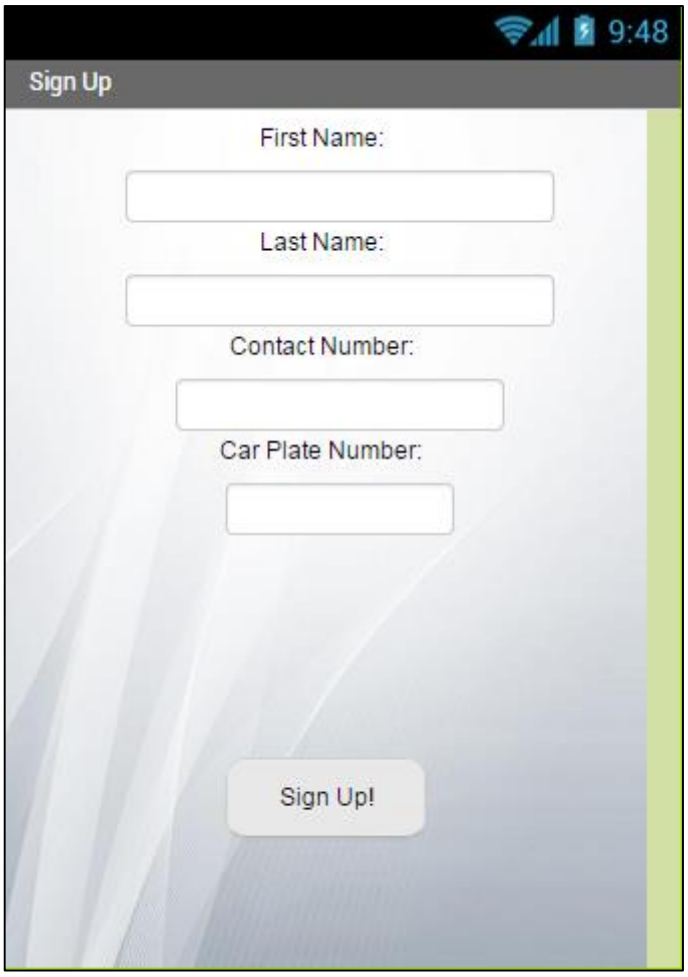


Figure 13: Sign Up UI

4.1.5 My account

On the account user interface a few useful function are provided such as the time duration the user apply. Below the time remaining, are the user registered plate number. Other primary function such as “Use coupon” is where user apply the time duration for parking. There is “Buy Coupon” button which the user able to buy the virtual coupon. The last button which “Change my plant number” allow user to change the car plate number. User may not change the plate number while using the coupon or during the time duration is still active to avoid fraud transaction or usage. On the lowest right, there is a log out function where user could log out anytime he wants or for the user’s family or friends to use. User will remain login, once the user login their account until they decide to logout. This function is benefits for that the same user does need to keep on login each time they wanted to use this application.

Figure 14: My Account UI

4.1.6 Buy Coupon

On the “Buy Coupon” page, there will be a several choice that user could make. The application offer five type of coupon package range from MYR 1.00 to MYR 50.00. Not only are the user given choices to choose which package, this application offer a few local bank for online transaction. This design to ease the user and give freedom of choice.

User able to add a particular package by clicking the add symbol and chose which whichever bank the use prefer. After the use complete this two basic step, the user could straight away click “Pay” button which will bring user to their particular chosen bank pay gateway. After the user proceed with a few process that required by the local bank and completed the purchase

Figure 15: Buy Coupon UI

4.1.7 Use Coupon

Proceeding the “Use Coupon” interface, user is given multiple choices to choose. The author are try to provide as much flexible choices that user could choose for efficiency and simplicity. This application will also show the total coupon balance left on user account, so that the user could check whether they have sufficient fund.

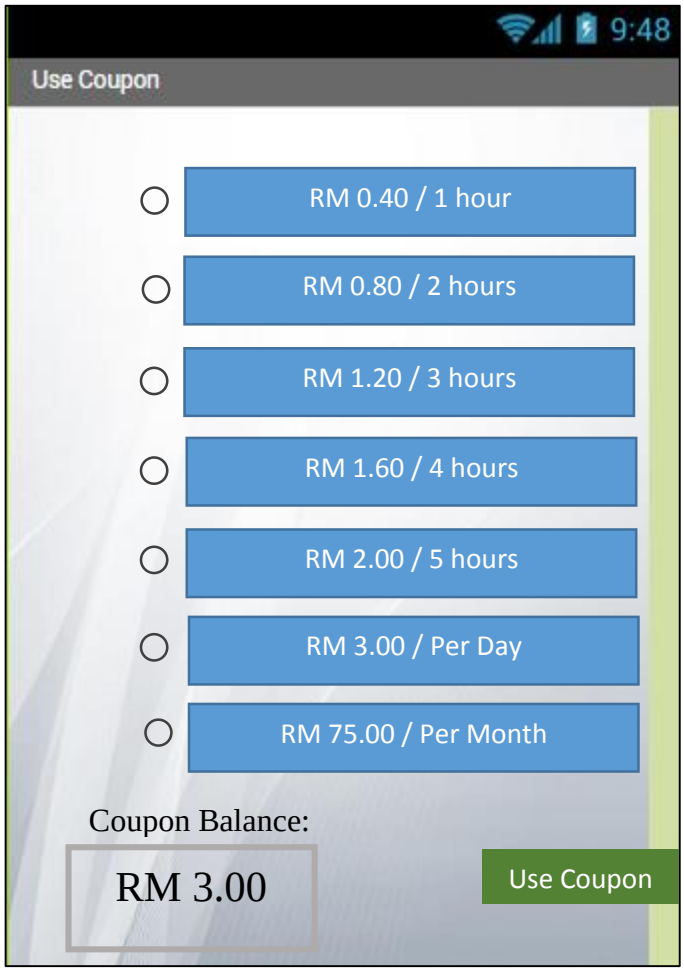


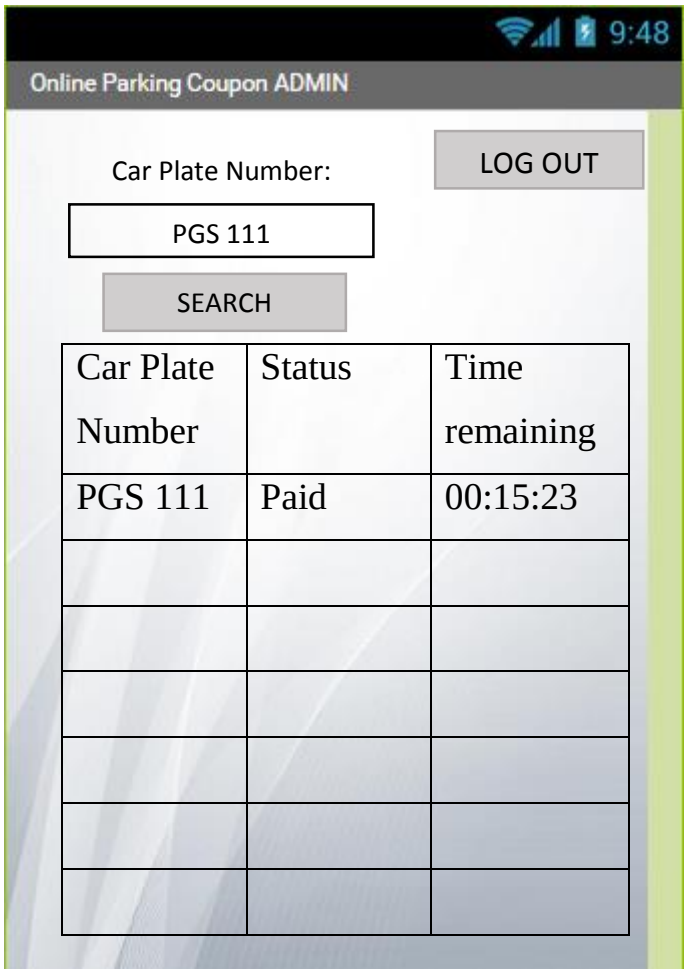
Figure 16: Use Coupon UI

4.1.8 Admin Page

This application will have 2 apps which for user and admin. The admin apps is for local authority to check car that did not display parking coupon on their dashboard and did they bought the virtual coupon or not. Admin need to login to use this system.

4.1.9 Admin Database Page

After the admin login they will be direct to this page. Admin can check the car plate number by fill the search bar. If found it will display on the table and indicate that the status are paid. If no database found means that the car did not pay the parking coupon.

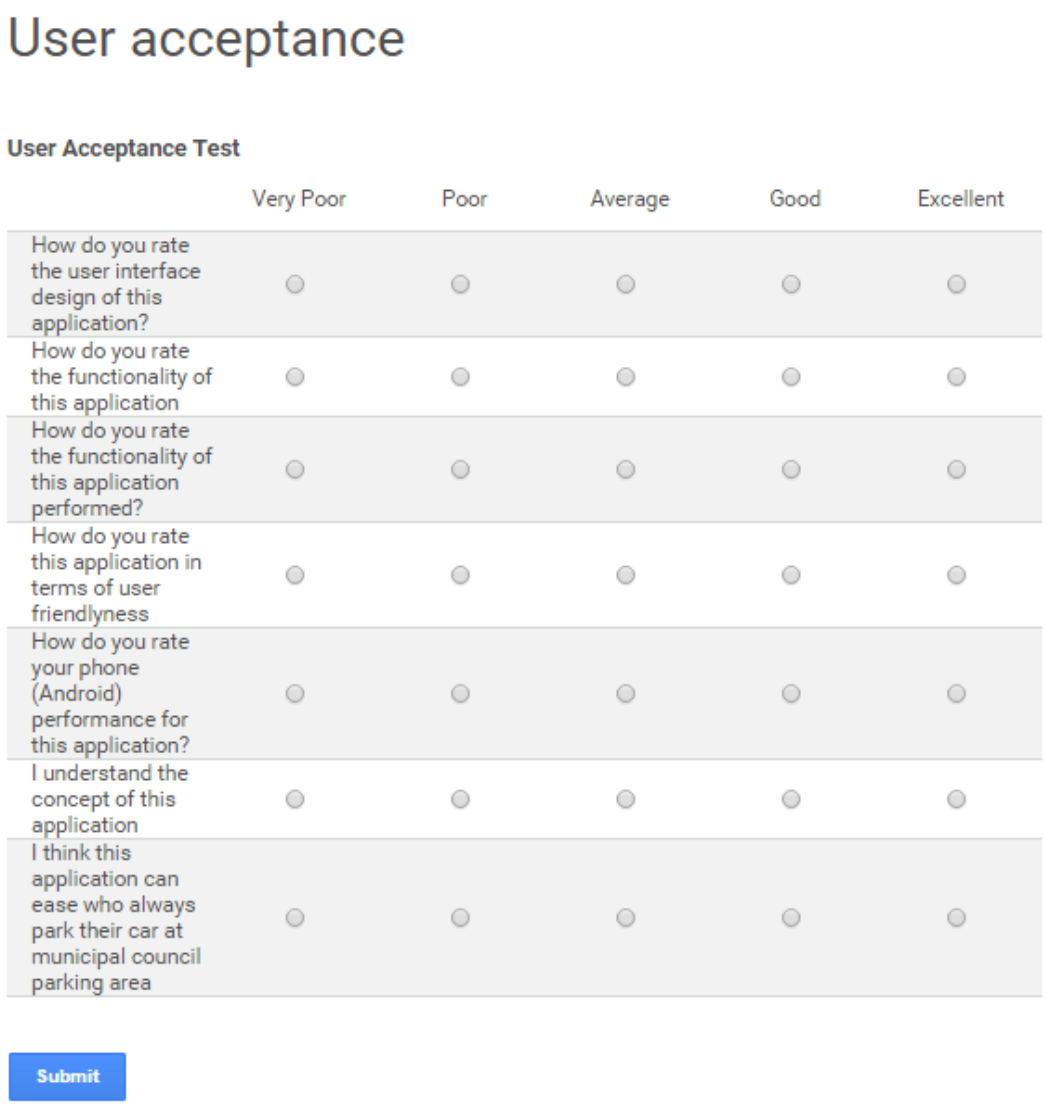


4.2 System Testing

System testing was conducted to this application. There two testing involve which is user acceptance testing and functionality testing.

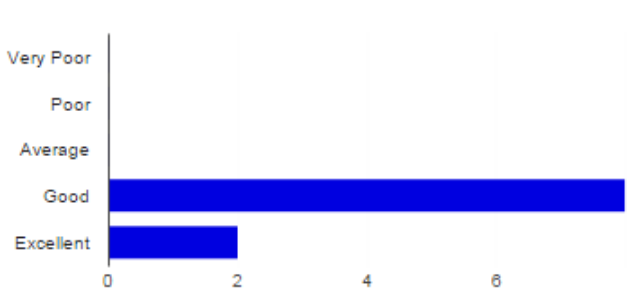
User Acceptance Test

User acceptance test is for user to test the performance, functionality and user interface. Basically it was like asking for feedback after the user use the application. The question and result of test are shown. The author has gave 10 respondent to test the applications.



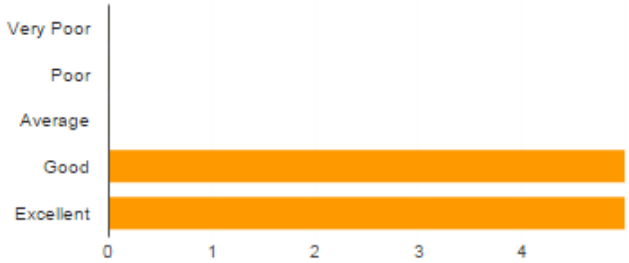
Figure

How do you rate the user interface design of this application? [User Acceptance Test]



Very Poor	0	0%
Poor	0	0%
Average	0	0%
Good	8	80%
Excellent	2	20%

How do you rate the functionality of this application [User Acceptance Test]

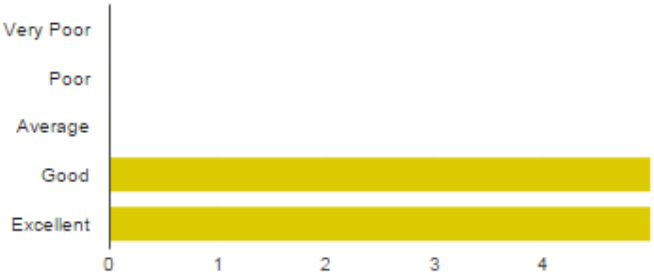


Very Poor	0	0%
Poor	0	0%
Average	0	0%
Good	5	50%
Excellent	5	50%

How do you rate the functionality of this application performed? [User Acceptance Test]

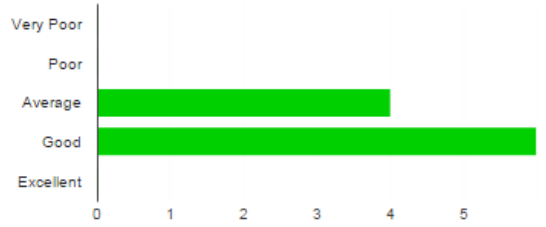
Very Poor	0	0%
Poor	0	0%
Average	1	10%
Good	8	80%
Excellent	1	10%

How do you rate this application in terms of user friendlyness [User Acceptance Test]



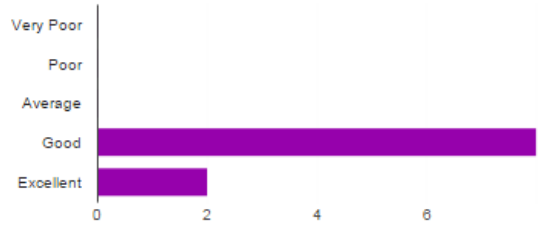
Very Poor	0	0%
Poor	0	0%
Average	0	0%
Good	5	50%
Excellent	5	50%

How do you rate your phone (Android) performance for this application? [User Acceptance Test]



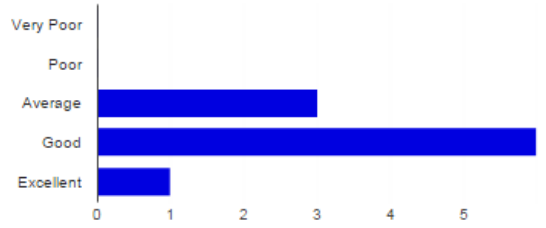
Very Poor	0	0%
Poor	0	0%
Average	4	40%
Good	6	60%
Excellent	0	0%

I understand the concept of this application [User Acceptance Test]



Very Poor	0	0%
Poor	0	0%
Average	0	0%
Good	8	80%
Excellent	2	20%

I think this application can ease who always park their car at municipal council parking area [User Acceptance Test]



Very Poor	0	0%
Poor	0	0%
Average	3	30%
Good	6	60%
Excellent	1	10%

Functionality Test

Functionality test is basically to test the functionality of component or system. It refers to activities that verify a specific action or function of the code

User application

Function	Expected Outcome	Testing Frequency	Testing Result Success/Fail	Remark
Find Car Park Area	Able to proceed to google map and show nearest car park area	10	7 Success 3 Fail	If slow internet connection resulting in failure.
My Car	Able to proceed to Sign up or Login page	10	10 Success	
Sign Up	Able to register user and saved to database	10	9 Success 1 Fail	1 user fail to save info at database
Login	Able to proceed to my account page	10	10 Success	
My account	Able to show time remaining, user plate number, access buy coupon and use coupon function	10	8 Success 2 Fail	Fail to show user registered plate number and time remaining not working
Buy Coupon	Able to buy coupon and successful transaction	10	10 Success	
Use Coupon	Able to use virtual coupon	10	10 Success	

Admin application

Function	Expected Outcome	Testing Frequency	Testing Result Success/Fail	Remark
Login	Admin can login and proceed to database page	10	10 Success	
Admin Database	Search car plate number that used coupon	10	10 Success	
Log out	Able to logout and proceed to Login page	10	10 Success	

4.3 Questionnaire's Results and Analysis

As stated on chapter 3, data gathering, under methodology, one of the approach the author use is distribution of online questionnaire via media social such as Facebook. The author stated that 10 questions have been prepared to study the behaviour and feedback from respondent.

After a few days of distribution of questionnaire, the author manage to collect 61 valid responses from different age and background. The results of questionnaire have help the author to learn the feedback and behaviour of respondent and will use the information for the betterment of this project. Following are the results of the survey:

1.

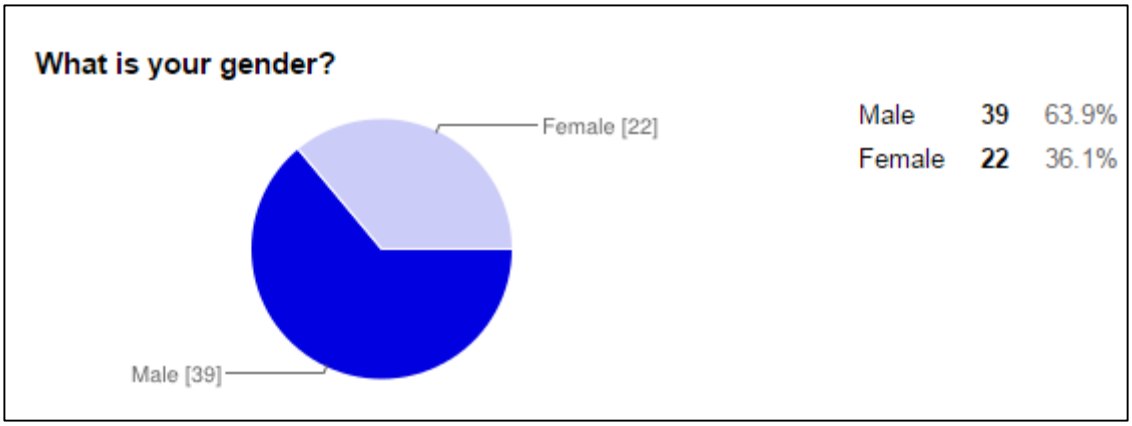


Figure 17

As for question 1, the most basic question is to identify respondent gender. In this case 39 respondent are males and 22 are females.

2.

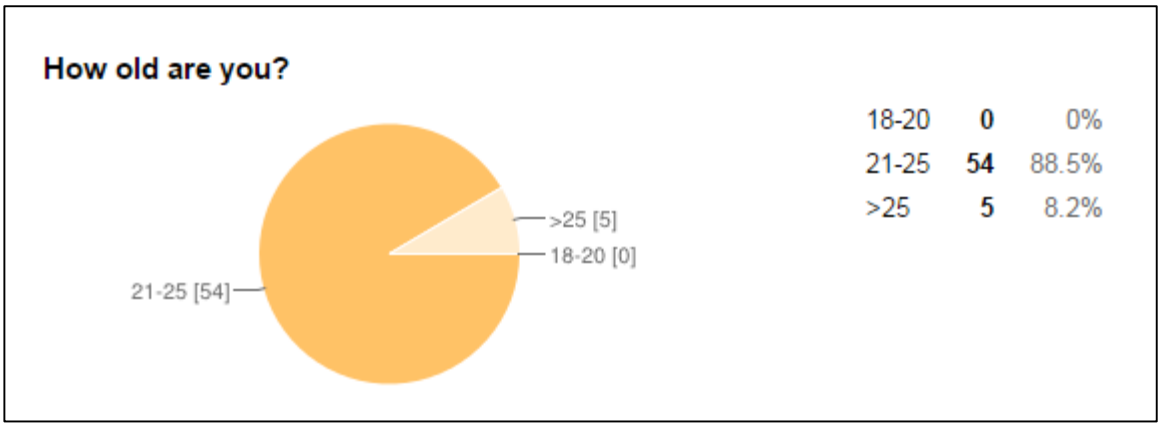


Figure 18

As for second question are also a demographic question where to study the age of a person. The age of a person will often determine his/her knowledge and experience with the focus of the survey. The majority of respondent are from age 21-25, follow by >25 years old and last but not least age 18 to 20 with 2 respondent.

3.

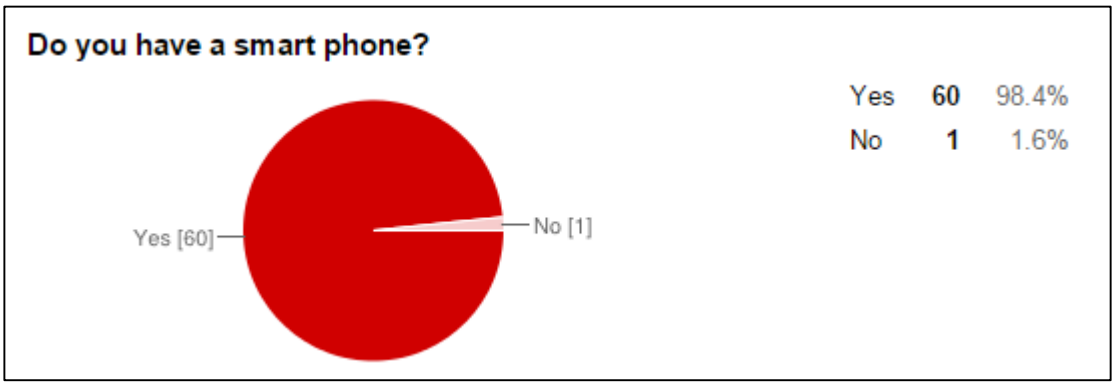


Figure 19

The third question aim to study the impact of smart phone towards society. From the results that the author received, it show that nowadays most of person owned a smart phone. The study show most of people are depends on smart phone now due to its advantages and useful functions. The influence of mobile

technology or smart phone has proven to be a device that could ease people life in terms of communicating, completing task and much more.

4.

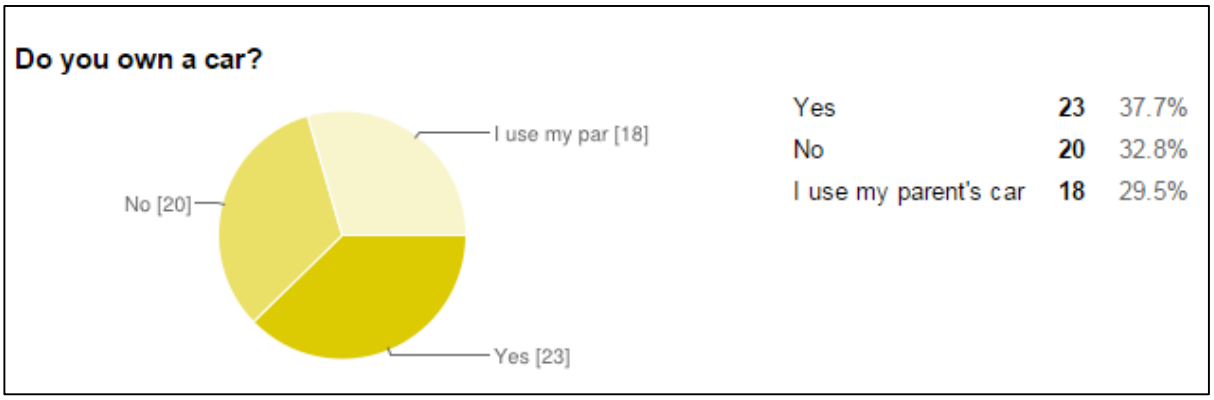


Figure 20

Proceeding to the next question, the author aim to study how many respondent own a car or drive them. Most of them answer yes, they owned a car follow by no, the respondent did not own a car and lastly the respondent use their parent's car. There is two objective of this question first to study the impact of car toward young society today and the second objective is the majority of are able to drive. The study show most respondent from age 21-25 years old owned a car while they studying or working.

5.

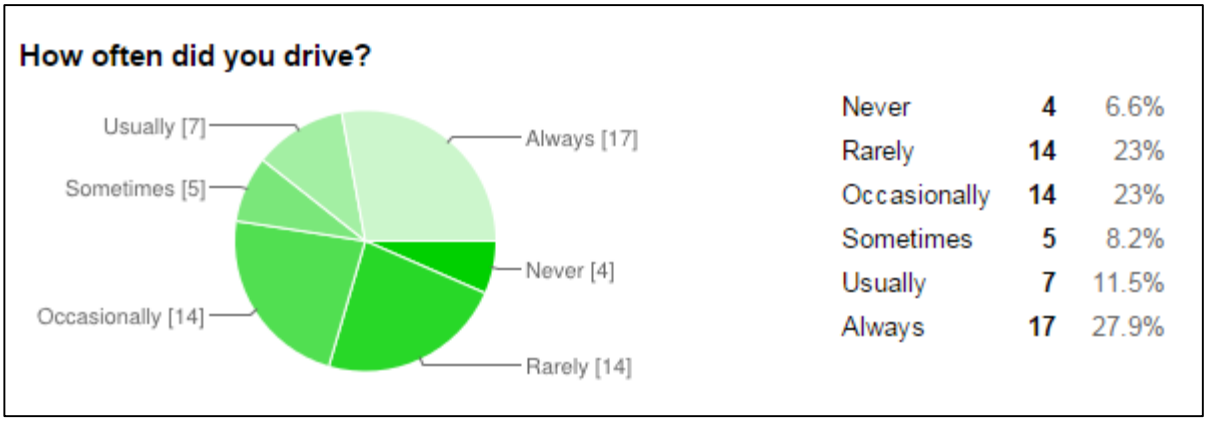


Figure 21

The next questions aim to learn how often the respondent drive as their routine task every day. The highest percentage that we get from the results show most of the respondent always drive. This show them the probability that they need to park at municipal council parking area.

6.

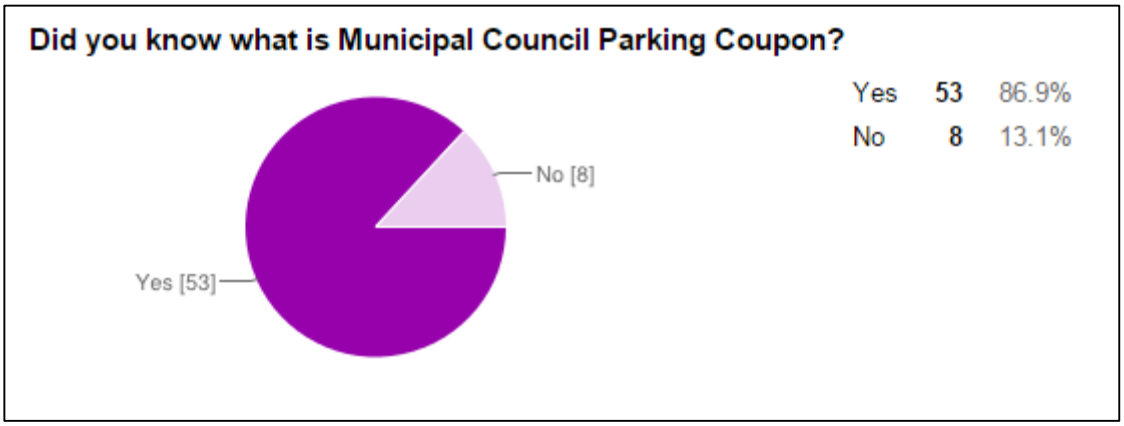


Figure 22

The sixth question is design to study the awareness of respondents toward the existent of municipal council parking coupon system. The results shown majority of respondent know about the municipal council parking coupon system and 8 respondent does not aware about the system. There is probability that an individual fined by local authorities due to reason they did know the implementation of municipal parking coupon system.

7.

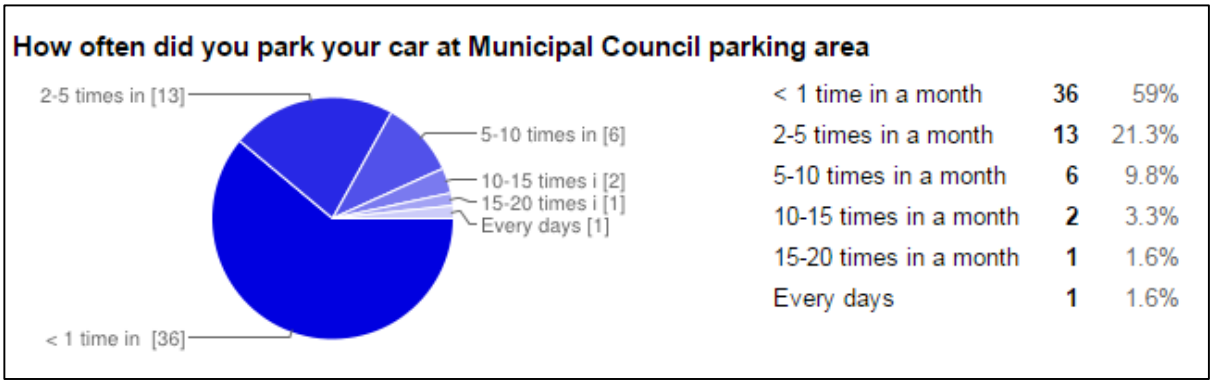


Figure 23

The following question are to study the frequency of respondent that park their car at municipal council parking area. The results shown that most of the respondent only park only once or did not park at all. About 13 respondent park their car at municipal council parking area with the occurrence of 2 to 5 times in a month. Six respondent park their car 5 to 10 times in a month follow by 10 to 15 times in a month by 2 respondent and lastly 15-20 times in a month and every day by 1 respondent respectively.

8.

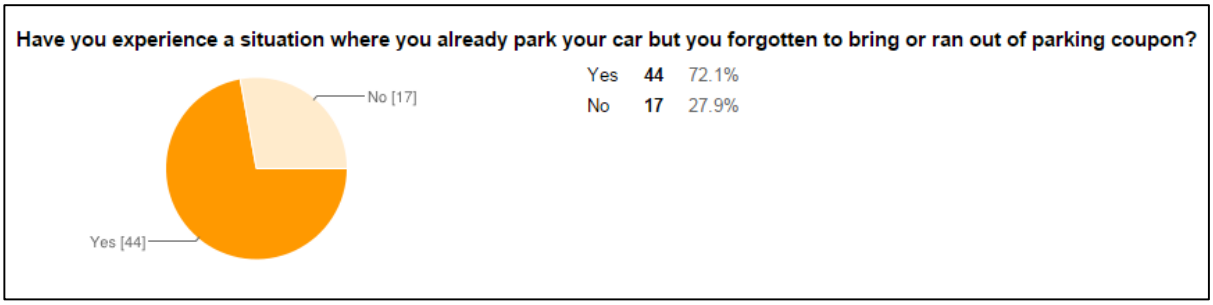


Figure 24

Question eight aim to study one of the common reason that an individual always get fined by local authorities where they forgotten to bring or ran out of parking coupon. As we know that parking area provide limited parking space and it is quite hard to obtain a parking space speaking from experience and observation that the author conducted. As we know human are tend to forgot unimportant matters, for some that seldom park at the municipal council parking they tend to forgot to check for parking coupon earlier and perhaps does not bring this matter carefully.

9.

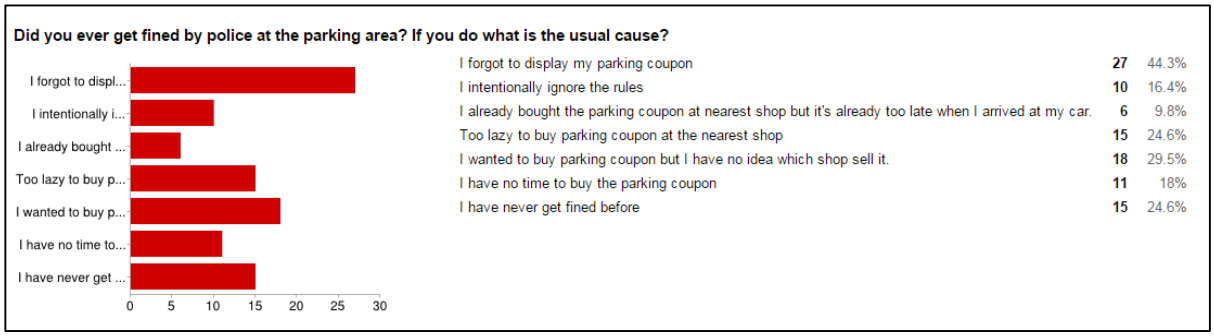


Figure 25

Question 9 are aim to study whether if the respondent are ever get fined by local authorities and if they do what is the usual cause. The majority of the answer are the respondents forgot to display their parking coupon. The author aim to design this application so that it could avoid this situation whereby although they forgot it, but maybe if suddenly it comes to their mind, they could straight away use this apps without the needing to return to their car and display the coupon, this method will save them a lot of time. The second most usual causes are whereby they have already park their car and wanted to buy coupon but unfortunately they did know where to buy it. Municipal Council authorize some merchandiser as an agent for selling parking coupon, but the problem there are only a few of them and it will cause a problem for those are not familiar with the area followed by third and fourth are causes by their own intention of disobeying the rule. Another reason that the author would like to highlight is where the respondent already bought the parking coupon at the nearest shop but unfortunately the local authority already fined them. The author design the application where user could buy coupon via online that could save the time.

10.

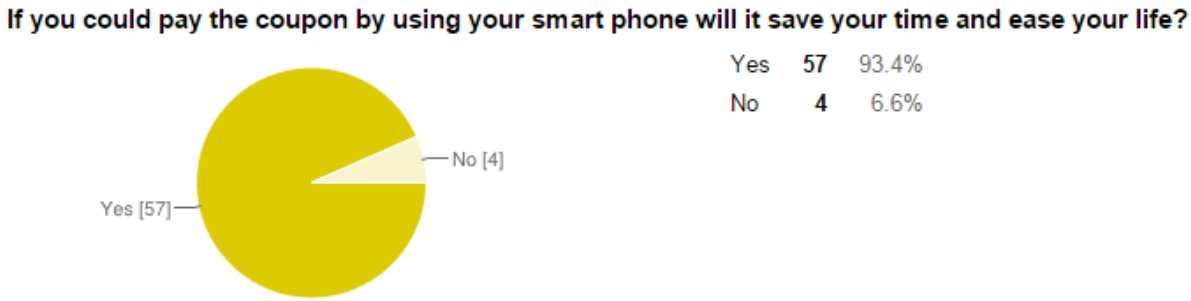


Figure 26

The last question are mainly to study the feedback of respondent regarding implementation of this project in the future. The majority of feedback that the author received are positive feedback that agreed this application could save their time and ease their daily routine and task. However there is negative feedback where by four of the respondent are not agreed with this project.

CHAPTER 5
CONCLUSION AND FUTURE RECOMMENDATION

Conclusion

In conclusion, the aim of this project is to introduce an alternative way of parking coupon and provide user with a simple yet useful application that could help them save time and on the same times ease their task. The author identify the difficultly or flaw that exist on today pay and display principles which included parking meter, park and display machine and parking coupon and come out with an alternative solution which is Online Parking Coupon. Online Parking Coupon is a mobile applications that offer user an alternative way of paying coupon via online.

The author has conducted a set of questionnaire that distributed online via social media such as Facebook. By analysis the feedback and analysis that the author received and study, the author found that the project could help a lot of people in the future.

Future Recommendation

Maintenance is a must since this application will be keep update due to parking area keep increasing. A few function are needed to maximize usability and efficiency such as multi language settings, and when entering municipal council parking area. For admin, the application could show all car that use the virtual coupon on that specific area instead the need of checking every car that did not show physical coupon on dashboard.

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Page 1 of 1

Online Parking Coupon

Online Parking Coupon is a mobile apps where you registered your vehicle plate number, after that you could simply pay your parking coupon via online. The information will saved on Municipal Council database.

What is your gender?*

- Male
- Female

How old are you?*

- 18-20
- 21-25
- >25

Do you have a smart phone?*

- Yes
- No

Do you own a car?*

- Yes
- No
- I use my parent's car

How often did you drive?*

- Never
- Rarely
- Occasionally
- Sometimes
- Usually
- Always

Did you know what is Municipal Council Parking Coupon? *
(Kupon Letak Kereta Majlis Pembandaran)

- Yes
- No

How often did you park your car at Municipal Council parking area*

- < 1 time in a month
- 2-5 times in a month
- 5-10 times in a month
- 10-15 times in a month
- 15-20 times in a month
- Every days

Have you experience a situation where you already park your car but you forgotten to bring or ran out of parking coupon?*

- Yes
- No

Did you ever get fined by police at the parking area? If you do what is the usual cause?*
You may choose more than one answer

- [ ] I forgot to display my parking coupon
- [ ] I intentionally ignore the rules
- [ ] I already bought the parking coupon at nearest shop but it's already too late when I arrived at my car.
- [ ] Too lazy to buy parking coupon at the nearest shop
- [ ] I wanted to buy parking coupon but I have no idea which shop sell it.
- [ ] I have no time to buy the parking coupon
- [ ] I have never get fined before

If you could pay the coupon by using your smart phone will it save your time and ease your life?*

- ( ) Yes
- ( ) No

User acceptance

User Acceptance Test

	Very Poor	Poor	Average	Good	Excellent
How do you rate the user interface design of this application?	( )	( )	( )	( )	( )
How do you rate the functionality of this application	( )	( )	( )	( )	( )
How do you rate the functionality of this application performed?	( )	( )	( )	( )	( )
How do you rate this application in terms of user friendlyness	( )	( )	( )	( )	( )
How do you rate your phone (Android) performance for this application?	( )	( )	( )	( )	( )
I understand the concept of this application	( )	( )	( )	( )	( )
I think this application can ease who always park their car at municipal council parking area	( )	( )	( )	( )	( )

Submit